AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1-24. (canceled)

25. (currently amended) A method for producing an immunogenic composition, comprising:

a) providing:
i) a nucleic acid encoding a heterologous antigen; and
ii) a nucleic acid encoding a ~~human hepatitis B~~ hepatitis virus core antigen;

b) altering at least one of said heterologous antigen and said ~~human hepatitis B~~ hepatitis virus core antigen, with a modification chosen from insertion of at least one acidic amino acid residue ~~and~~ or substitution of at least one acidic amino acid residue; and

c) inserting said heterologous antigen of step b within said ~~human hepatitis B~~ hepatitis virus core antigen of step b, to produce a modified ~~human hepatitis B~~ hepatitis virus core antigen;

d) expressing said modified ~~human hepatitis B~~ hepatitis virus core antigen under conditions suitable for producing particles ~~having a diameter of 25 to 35 nm~~.

26. (currently amended) The method of Claim 25, wherein in the absence of said altering, expression of said modified ~~human hepatitis B~~ hepatitis virus core antigen yields 25 fold less particles than does expression of a wild type ~~human hepatitis B~~ hepatitis virus core antigen.

27. (currently amended) The method of Claim 25, wherein said at least one acidic amino acid residue comprises at least one aspartic acid residue ~~and at least one glutamic acid residue~~.

28. (original) The method of Claim 25, wherein said insertion is in at least one position chosen from the N-terminus and the C-terminus of said heterologous antigen.

29. (original) The method of Claim 25, wherein said substitution comprises a replacement of at least one non-acidic amino acid residue within said heterologous antigen, with said at least one acidic amino acid residue.

30. (original) The method of Claim 25, wherein said altering produces a modified heterologous antigen with an isoelectric point in the range of 3.0 to 6.0.

31. (new) The method of Claim 25, wherein said altering produces a modified heterologous antigen with an isoelectric point in the range of 3.0 to 4.0.

32. (new) The method of Claim 25, wherein said altering produces a modified heterologous antigen with an isoelectric point in the range of 4.0 to 5.0.

33. (new) The method of Claim 25, wherein said altering produces a modified heterologous antigen with an isoelectric point in the range of 5.0 to 6.0.

34. (new) The method of Claim 29, wherein said non-acidic amino acid residue is a basic amino acid residue.

35. (new) The method of Claim 25, wherein said at least one acidic amino acid residue comprises at least one glutamic acid residue.

36. (new) The method of Claim 25, wherein said hepatitis virus core antigen comprises a C-terminal modification.

37. (new) A method for producing an immunogenic composition, comprising:

a) identifying a heterologous antigen for incorporation into a hepatitis virus core antigen;

b) identifying a site in said hepatitis virus core antigen for incorporation of said heterologous antigen;

c) providing a modified hepatitis virus core antigen, wherein said modified hepatitis virus core antigen is prepared by:

(i) incorporating at least one amino acid at the C terminus of said hepatitis virus core antigen, wherein said at least one amino acid is selected according to said identified site in said hepatitis virus core antigen; or

(ii) incorporating an acidic amino acid in said hepatitis virus core antigen; or providing a modified heterologous antigen, wherein said modified heterologous antigen is prepared by incorporating an acidic amino acid in said identified heterologous antigen; and

d) assembling said immunogenic composition by:

(i) incorporating said heterologous antigen within said modified hepatitis virus core antigen;

(ii) incorporating said modified heterologous antigen within said hepatitis virus core antigen; or

(iii) incorporating said modified heterologous antigen within said modified hepatitis virus core antigen.

38. (new) The method of Claim 37, further comprising truncating said hepatitis virus core antigen prior to incorporating at least one amino acid at the C-terminus of said hepatitis virus core antigen.

39. (new) The method of Claim 37, wherein a modified hepatitis virus core antigen is provided and said modified hepatitis virus core antigen is prepared by incorporating at least one amino acid at the C terminus of said hepatitis virus core antigen, wherein said at least one amino acid is selected according to said identified site in said hepatitis virus core antigen.

40. (new) The method of Claim 37, wherein a modified hepatitis virus core antigen is provided and said modified hepatitis virus core antigen is prepared by incorporating an acidic amino acid in said hepatitis virus core antigen.

41. (new) The method of Claim 40, wherein said acidic amino acid is aspartic acid or glutamic acid.

42. (new) The method of Claim 40, wherein said incorporation of an acidic amino acid is a replacement of at least one non-acidic amino acid residue with said at least one acidic amino acid residue.

43. (new) The method of Claim 37, wherein a modified heterologous antigen is provided and said modified heterologous antigen is prepared by incorporating an acidic amino acid in said identified heterologous antigen.

44. (new) The method of Claim 43, wherein said acidic amino acid is aspartic acid or glutamic acid.

45. (new) The method of Claim 43, wherein said incorporation of an acidic amino acid is a replacement of at least one non-acidic amino acid residue with said at least one acidic amino acid residue.

46. (new) The method of Claim 43, wherein said incorporation of an acidic amino acid produces a modified heterologous antigen with an isoelectric point in the range of 3.0 to 6.0.

47. (new) The method of Claim 43, wherein said incorporation of an acidic amino acid produces a modified heterologous antigen with an isoelectric point in the range of 3.0 to 4.0.

48. (new) The method of Claim 43, wherein said incorporation of an acidic amino acid produces a modified heterologous antigen with an isoelectric point in the range of 4.0 to 5.0.

49. (new) The method of Claim 43, wherein said incorporation of an acidic amino acid produces a modified heterologous antigen with an isoelectric point in the range of 5.0 to 6.0.

50. (new) The method of Claim 37, wherein said hepatitis virus core antigen is an orthohepadnavirus core antigen.

51. (new) The method of Claim 50, wherein said orthohepadnavirus core antigen is a human hepatitis virus core antigen.

52. (new) The method of Claim 50, wherein said orthohepadnavirus core antigen is a rodent hepatitis virus core antigen.

53. (new) The method of Claim 52, wherein said rodent hepatitis virus core antigen is a woodchuck hepatitis core antigen or a ground squirrel hepatitis core antigen.

54. (new) The method of Claim 37, wherein said hepatitis virus core antigen is duck hepatitis virus core antigen.

55. (new) The immunogenic composition produced by the method of Claim 37.